

City of Thornton, Colorado

Interim Small Cell Design Guidelines



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1. Executive Summary

1.1 Background

The City of Thornton (City), as with communities across the country and around the world, is facing the next wave of communications technology. While the economic benefits are immense, it has the potential to impact the safety, aesthetic values, and enjoyment of our community in a manner and to a degree that is far more extensive than cellular phones and other types of recent technology.

Small cell communications, also known as 5G technology, utilizes higher frequencies with the capability to accommodate significantly higher data needs than current 4G/LTE technologies. The physical limits of the higher frequencies require that the transmitters be installed at the spacing of streetlights or fire hydrants rather than 2+/- mile or greater distances that 4G/LTE technologies accommodate. The result of this physical need is that the public rights-of-way are the optimal location to install the required equipment. The Federal Communications Commission (FCC) has outlined the extent to which local agencies may or may not regulate the installation of these facilities within the public rights-of-way and the use of existing public infrastructure.

Similar to the advent of the telephone which required extensive wires, switch boxes, poles and other structures to provide these services, small cell communications technology will require a structure to mount a transmitter approximately every 400 to 500 feet with fiber and power connections to each one.

Absent the adoption of standards to assure that installations are context sensitive, service providers would be free to install equipment with no concern for the visual impact that they create. This document seeks to accommodate the implementation of the new technology while assuring that the new infrastructure is installed using context sensitive solutions.

In addition, the equipment needs to be located where it will not interfere with visibility for drivers, interference with sidewalks, or other common amenities found in public rights-of-way.

The provisions of the Code of Ordinances Chapter 18 – Article 9: Wireless Telecommunication Facilities have been established for related technology; however, they do not address the specific issues generated by small cell (4G/LTE/5G) technology. For example, the structure heights within Article 9 address tower heights up to 60 feet which would not blend into a single-family residential district with a height limit of 35 feet, especially at the spacing along our streets similar to a streetlight or a fire hydrant.

Other issues such as safety, noise and accommodating multiple providers at each location are also addressed within these standards.

1.2 FCC Order

On September 26, 2018, the Federal Communications Commissions (FCC) adopted a Declaratory Ruling and Third Report and Order, titled “Accelerating Wireless Broadband Deployment by Removing Barriers to Infrastructure Investment” (the Order). The Order establishes fees, “shot clocks,” and provides mandates on local governments’ control of small cell infrastructure. It also establishes preliminary fees as a safe harbor for municipalities as follows:

- \$500 for non-recurring fees, including a single up-front application that includes up to five Small Cell Facilities, with an additional \$100 for each small cell facility beyond five
- \$1,000 for non-recurring fees for a new pole (not a collocation) intended to support one or more small wireless facilities.
- \$270 per small wireless facility per year for all recurring fees, including any possible ROW access fee or fee for attachment to municipally-owned structures in the ROW.

The City of Thornton reserves the right to establish fees that are a “reasonable approximation of the local government’s objectively reasonable costs” as permitted by the FCC to cover all related costs associated with the required permits.

The following shot clocks are the FCC's permit review times for new small cell facilities:

- A 60-day review period for collocation of small cell facilities
- A 90-day review period for construction of new small cell facilities

Existing shot clocks for non-small cell facilities deployments have not changed due to the FCC order:

- 90 days for collocation on an existing structure
- 150 days for deployment on a new structure

According to the FCC Order, the shot clock rules are as follows:

- Both the new and existing shot clocks apply to “any approval that a siting authority must issue under applicable law prior to deployment.” This includes zoning approvals and building permits, and may also include license or franchise agreements to access the rights of way, leases for use of municipal poles or property in the rights of way, electric permits and road closure permits, among others.
- For small cell facilities deployments, shot clocks are reset if the siting authority notifies the applicant within 10 days after submission that the application is incomplete. For subsequent determinations of incompleteness, the shot clock would pause—not reset—if the siting authority provides written notice within 10 days that the supplemental submission did not provide the requested information.
- For non-small cell facilities, shot clocks begin to run when an application is first submitted, and can be paused—not reset—if the siting authority notifies the applicant within 30 days that the application is incomplete. For subsequent determinations of incompleteness, the process is the same as described above for small wireless facility.
- Failure to act within the new small cell facility shot clock constitutes a presumptive violation of the Communications Act and applicants may seek expedited injunctive relief in court within 30 days of a local government missing a shot clock deadline. There is no “deemed granted” remedy.

The FCC Order, limits aesthetic reviews and requirements (including undergrounding and historic/environmental requirements) to what is:

- (a) reasonable
- (b) no more burdensome than those applied to other types of infrastructure deployments
- (c) objective and published in advance

The effective date of the 2018 Order with respect to the new limitations on rights-of-way fees and deadlines for acting on permit applications was January 14, 2019, and the new limitations on aesthetic standards will go into effect April 15, 2019. The FCC declaration is intended to assure the rapid deployment of small cell technology. In support of this goal, ***the City of Thornton is establishing a 180-day expiration for a small cell permit which shall include activation and use of the new facility or the permit shall expire.***

1.3 Statement of Purpose

The City of Thornton Interim Small Cell Design Guidelines which provide objective, technically feasible criteria applied in a non-discriminatory manner are hereby established with the goal of accommodating the installation of small cell (4G/LTE/5G) technology within City of Thornton public rights-of-way provided that the installations meet the following standards:

- Aesthetics
- Location
- Spacing of facilities along streets
- Accommodation of two to three providers at each location
- Safety
- Noise

2. General Information

2.1 Introduction and Purpose

These Interim Small Cell Design Guidelines are intended to supplement the requirements of Article IX of the Thornton City Code – Wireless Telecommunication Facilities which do not address small cell technology issues. They provide objective, technically feasible criteria applied in a non-discriminatory manner that reasonably match the aesthetics and character of the immediate area regarding all of the following, which the City shall consider in reviewing an application.

- (a) The location of any ground-mounted small cell facilities including their relationship to other existing or planned small cell sites
- (b) The location of a small cell facility on a wireless support structure
- (c) The appearance and concealment of small cell facilities, including those relating to materials used for arranging, screening, and landscaping
- (d) The design and appearance of a wireless support structure including any height requirements

It is the goal of the City to allow the installation of a small cell infrastructure with a minimum foot print. This shall be accomplished by small cell siting and the use of multi-cell poles that can accommodate multiple applicants.

The City may revise, develop new, update, or amend these Guidelines as necessary to meet the goals of the City. The provisions of these Guidelines shall not limit or prohibit the City's discretion to promulgate and make publicly available other information, materials or requirements in addition to, and separate from these Small Cell Design Guidelines that do not conflict with state or federal law.

2.2 Definitions

The definitions of City Code shall apply to this document unless defined differently here. If a word is not defined here or in City Code, it shall have the usual and customary meaning as defined in a standard dictionary. The following words, terms and phrases, when used in this article, shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Administrative Review means ministerial review of an Application by the City relating to the review and issuance of a Permit, including review by the designated staff to determine whether the issuance of a Permit is in conformity with the applicable provisions of these Guideline and all City Codes.

Antenna means the specific device used for the purpose of collecting or transmitting electromagnetic waves. Antennae include but are not limited to directional antennae (such as panels, microwave dishes, and satellite dishes) and omnidirectional antennae (such as whip antennae and vertical antennae).

Applicable Codes means any code drafted and adopted by the City as well as uniform building, fire, safety, electrical, plumbing, Uniform Traffic Control or mechanical codes adopted by a recognized national code organization to the extent such codes have been adopted by the City, including any amendments adopted by the City, or otherwise are applicable in the jurisdiction.

Applicant means the person submitting an application that is proposing an action requiring review and approval by one or more of the sections in this chapter. An applicant may subsequently become the developer once approval is granted, and in this case the terms shall be interchangeable.

Application means the process by which a person submits a request to perform construction activity and/or indicates a desire to be granted permission in any way to utilize the rights-of-way of all, or a part, of the City. An application includes all written documentation, in whatever form or forum, made by a person to the City concerning: the installation of any type of public improvements, public utility facilities, the construction

of a cable system or any type of information or telecommunications system over, under, on or through the rights-of-way.

Attached wireless facilities are those affixed to a structure except optical fiber, wires, coaxial cable and the mounting hardware used to attach optical fiber, wires, and coaxial cable. Examples of attached facilities include but are not limited to antennas, telephone boxes, power boxes, and other equipment boxes and cabinets on structures located on the ground.

Batched Applications is the submission of multiple siting applications at one time. Batched applications shall not exceed 10 individual Small Cell Facilities.

City means the City of Thornton.

City cost means all costs borne by the City for the administration of this article.

City Council means the Thornton City Council.

City Manager means the Thornton City Manager or designee.

Code means the Thornton City Code.

Collocate means to install or mount a Small Wireless Facility in the Public ROW on an existing Support Structure, an existing Tower, or on an existing Pole to which a Small Wireless Facility is attached at the time of the Application. "Collocation" has a corresponding meaning.

Communications Facility means collectively, the equipment at a fixed location or locations within the Public ROW that enables Communications Services, including: (i) radio transceivers, Antennas, coaxial, fiber-optic or other cabling, power supply (including backup battery), and comparable equipment, regardless of technological configuration; and (ii) all other equipment associated with any of the foregoing. A Communications Facility does not include the Pole, Tower or Support Structure to which the equipment is attached.

Construction permit means the authorization to undertake any type of excavation or work, as defined herein, in the rights-of-way or to construct public improvements, as defined herein, in the City or undertake any construction activity within the City. A construction permit can be issued either as a ROW construction permit or as a site construction permit, as applicable.

Contractor means a person, partnership, corporation, or other legal entity who undertakes to construct, install, alter, move, remove, trim, demolish, repair, replace, excavate, or add to any improvements or public improvements covered by this article, that requires work to be undertaken and workers, and/or equipment to be in the ROW in the process of performing the above-named operations. Contractor, as the term is defined herein, should include any and all types of general contractor and subcontractor and successors or assigns of said contractor.

Development Code means Chapter 18 of the City Code, as amended.

Director means the Executive Director of the Infrastructure Department for the City.

Equipment Concealed Whenever technically feasible, antennas, cabling, and equipment shall be fully concealed within a Pole, or otherwise camouflaged to appear to be an integrated part of a Pole.

Excavate or excavation means to dig into, including boring into, or in any way remove, distribute or penetrate any part of a ROW.

Facilities means any and all equipment, structures, materials or tangible components located in the rights-of-way and used to provide a service, including without limitation: all plants, whether inside or outside, fiber strands or optic lines, electronic equipment, amplification equipment, optic equipment, transmission and distribution structures, antennas of any type, lines, termination equipment, pipes, poles, ducts, mains,

conduits, inner ducts, regenerators, repeaters, underground lines, vaults, manholes, pull boxes, splice closures, wires and cables, and all other like equipment, fixtures and appurtenances used in connection with transmitting, receiving, distributing, offering, and/or providing such service. Facilities shall include, as the context dictates, wireless telecommunication facilities, as defined herein.

Franchise means a right granted by the City for use of the rights-of-way, or any other City-owned or City-controlled real property designated to be or actually used by public utilities, cable providers, or other operators/entities for which a franchise can be granted pursuant to law, for the construction, operation and/or maintenance of a public utility, or any type of cable system or other operations within all of the City or such portions thereof as may be proposed and authorized for such construction operation and/or maintenance, including the City's growth area. Any such authorization, in whatever form granted, shall not mean and shall not include any license or permit required for the privilege of transacting and carrying on a business within the City as required by this Code, other ordinances, resolutions or regulations of the City.

Height means maximum height of the small cell facility, including antenna, above established grade measured at the base of the structure

Inspector means the person designated by the City within the infrastructure department or the City development department to fulfill the responsibilities that have been empowered with such position.

Landscape means any combination of living plant material, such as trees, shrubs, vines, ground covers, flowers, vegetables, turf or grass; natural features, such as land and water forms; and structural features, including but not limited to landscaped pedestrian plazas, fountains, reflecting pools, screening, walls, fences and benches.

Macro Wireless Telecom Facility means telecommunication towers, poles or similar structures greater than 50 feet in height, including accessory equipment such as transmitters, repeaters, microwave dishes, horns, and other types of equipment for the transmission or receipt of such signals, as well as support structures, equipment buildings and parking areas.

Micro Wireless Facility means a small wireless facility that is no larger in dimensions than twenty-four inches in length, fifteen inches in width, and twelve inches in height and that has an exterior antenna, if any, that is no more than eleven inches in length. This is a strand-mounted facility.

Monopole means a standing antenna support structure with no guy wires placed directly on the ground to support one or more small cell facilities.

Multi-User Facility means a facility that is designed to accommodate two or more service providers.

Ordinary Maintenance and Repair means inspections, testing and/or repair that maintain functional capacity, aesthetic and structural integrity of a Communications Facility and/or the associated Support Structure, Pole or Tower, that does not require blocking, damaging or disturbing any portion of the Public ROW.

Permittee means any person making application for or in possession of any type of construction permit to perform any construction activity, excavation, or work within the corporate limits of the City.

Provider means any person including a franchisee who is providing or is in the process of seeking permission to provide a service to citizens of the City through the placement of facilities or structures either owned or leased in and thereby occupying the rights-of-way, as defined herein.

Public improvements means any item placed or constructed in public rights-of-way intended for public use including, but not limited to: roadways, streets, alleys, sidewalks, curbs, gutters, trails, crosswalk or other traffic markings or traffic structures, utilities (water, sanitary sewer, or storm sewer) either owned by or dedicated to the City, or over which the City has or there is recorded a public easement, any private access either owned or dedicated to the City, parking lots, or landscaping, whether privately or publicly owned or maintained, unless otherwise specifically exempted within this chapter.

Responsible party means any person or entity who owns facilities or structures located or to be located in the City rights-of-way and/or who is liable, whether financially or otherwise, for any installation, repair, or maintenance of facilities, or public improvements, either public or private, placed on or to be placed in the City rights-of-way.

Rights-of-way or ROW means the surface and space above and below any real property in which the City has a real property interest and/or which have been dedicated to the public or is hereafter dedicated to the public and maintained under public City or by others at the direction of the public City and located within the City including, but not limited to, public: streets, roadways, highways, avenues, lanes, alleys, bridges, sidewalks, easements, public ways and similar public property and areas.

ROW construction permit means a category of the general construction permit under the ordinance.

Sidewalk means a paved walkway or pathway for the purpose of pedestrian traffic abutting or running parallel or adjacent to a street.

Signage Signage is prohibited on all small cell facilities and wireless support structures, including stickers, logos, and other non-essential graphics and information unless required by the FCC and small placard identifying the service provider, contact information which shall be placed facing away from the public rights of way.

Site construction permit means a category of the general construction permit that is issued under the ordinance.

Small cell facility(ies) means:

A wireless service facility that meets both of the following qualifications:

- A. Each antenna is located inside an enclosure of no more than three cubic feet in volume or, in the case of an antenna that has exposed elements, the antenna and all of its exposed elements could fit within an imaginary enclosure of no more than three cubic feet; and
- B. Primary equipment enclosures are no larger than seventeen cubic feet in volume. The following associated equipment may be located outside of the primary equipment enclosure and, if so located, is not included in the calculation of equipment volume: Electric meter, concealment, telecommunications demarcation box, ground-based enclosures, back-up power systems, grounding equipment, power transfer switch, and cut-off switch.

"Small Cell Facility" includes a Micro Wireless Facility.

Standards and Specifications means the latest edition of the City of Thornton Standards and Specifications for the Design and Construction of Public and Private Improvements.

Street, highway or roadway means the entire width between the boundary lines of every ROW or easement publicly or privately maintained and open to the use of the public for the purposes of vehicular travel.

Structure means anything constructed or erected with a fixed location below, on, or above grade, including, without limitation, service cabinets, junction boxes, foundations, fences, retaining walls, awnings, balconies, and canopies.

Structure means that which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Telecommunications means the transmission, between or among points specified by the user, of information of the user's choosing, without change in the form or content of the information as sent and received.

Telecommunication service(s) means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used.

Telecommunication service provider or *telecommunications applicant* means any provider of telecommunications services, except that such term does not include aggregators of telecommunications services (as defined in 47 U.S.C. Section 226).

Telecommunication system means the offering of telecommunications for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regardless of the facilities used. A system that provides both cable and telecommunications or information services may be considered both as a cable system and a telecommunications system pursuant to this Code.

Wireless facility(ies) means capital equipment and property, including but not limited to the optical fiber, wires, pipes, mains, conduits, ducts, pedestals, poles, antennas, cabinets and electronic equipment located in the streets used for transmitting, receiving, distributing, providing or offering wireless telecommunication services over the spectrum of radio frequencies licensed by the Federal Communications Commission.

Work means any and all types of construction activity or excavation performed within the City, in the ROW, and/or related to installation of public or private improvements in or on any property that is within the City limits or will be dedicated to the City as ROW.

2.3 Application Procedures

Complete application requirements can be found in Article VII. Rights-of-Way Management. As a minimum the application must include the following documentation. Unless the wireless regulations provide otherwise, the applicant must submit an electronic copy (in a searchable format) of any application, as well as any amendments or supplements to the application or responses to requests for information regarding an application, to the Designated Staff. An application is not complete until electronic copies are received by the Designated Staff.

2.3.1 Submittal Requirements

No application will be considered complete until all requirements are met. Shot clocks shall not begin until the City determines the application is complete.

- a. Completed application form.
- b. Detailed site and engineering plans.
- c. A copy of the Right-of-Way Use Agreement applicable to the facilities included within this permit.
- d. An area map showing the location of all existing above ground poles and facilities within 1,000 feet and the location or locations of all proposed Small Cell Facilities proposed in that application. Identify what existing facility will be used or replaced including any identifying numbers for the specific pole or a general description of the location such as nearest address or distance and direction from nearest intersection.
- e. Design drawings of proposed equipment meeting all City requirements including make, model and color with dimensions demonstrating that the proposed equipment was specifically designed for all proposed uses (i.e. signal pole, streetlight, small cell, multiple small cell, cabinets, enclosures, etc.)
- f. Written documentation demonstrating a good faith effort to locate the facility in the least intrusive location and screened to the greatest extent feasible such as a visual impact analysis with photo simulations to scale showing before and after conditions;
- g. When the existing utility distribution pole supporting aerial utility lines is proposed to be used, a

load analysis completed, sealed and signed by a Professional Engineer licensed and registered by the State of Colorado which indicates that the pole to which the small cell facility will be attached will safely support the loads. All other poles shall be replaced with a new pole designed to accommodate all proposed uses.

- h. Certification by a certified RF engineer demonstrating compliance with the FCC standards for radio frequency emissions as they relate to the general public, including aggregate emissions for all co-located equipment;
- i. Written evidence of indemnifying and holding the City, its elected officials, employees, agents and representatives harmless from any judgment, award, damage or loss, including court costs and attorney's fees, resulting from a successful legal action brought against the City for loss of property value due to the construction or operation of a small cell installation signed by the owner of the proposed small cell facility. Should that owner change at any time, new written evidence will be required.
- j. A written description identifying the geographic service area for the subject installation, accompanied by a plan, maps, and a KMZ file showing anticipated future installations, including latitudes and longitudes, and modifications for the following two years, in addition to the master plan described by this section.
- k. One entity may submit up to 10 individual applications at one time in a batch. If that entity submits more applications within 30 days of the first batch, the City has the right to retain outside expertise to review those additional applications. All costs for the outside expertise shall be the responsibility of the submitting entity and must be paid before permits are issued.
- l. Traffic control plan
- m. Construction permit application
- n. Stormwater management plan
- o. All applicable Permit fees for small cell facilities shall be submitted prior to final approval of the application.

2.3.2 Application Process

This general application process is subject to change at the discretion of the City.

1. ROW use agreement is established (developed in conjunction with Legal staff) and approved by City Council.
2. With ROW use agreement in place, small cell provider is allowed to submit small cell locations for approval.
3. Small cell submittal is reviewed by designated staff for compliance with terms of ROW use agreement, City Code requirements, and requirements of the small cell design guidelines. Submittal is not considered complete until compliance is achieved. If the application is deemed incomplete, the applicant will be notified and the shot clock will be stopped. The shot clock will be reset once a complete application is submitted.
4. Once small cell submittal is deemed complete, locations are documented in exhibit from ROW use agreement and small cell provider can then apply for construction permit and traffic control permit.
5. Both the construction and traffic control permit are issued (construction permit cannot be issued until traffic control permit is approved).

6. Prior to construction, the City shall be notified per requirements of the construction permit so that an inspection of each site can be conducted to identify any pre-existing infrastructure damage.
7. Contractor installs the facility according to approved plans.
8. Contractor requests an inspection of the facilities.
9. Inspector verifies that the facility has been constructed according to the approved permits. Inspector identifies any new damage to infrastructure and gives contractor 10 days to complete all repairs.
10. Once all permit requirements have been completed, inspector approves the final installation.

2.3.3 Expiration of approval

City approval of small cell facilities in right-of-way shall expire after 180 days unless the site has been fully installed, inspected, approved and activated to provide continuous and ongoing service.

2.3.4 Specific Exclusions

Fiber conduit and lines are not included in this process or approval and shall be reviewed by a separate process.

3. Pole Design Guidelines

3.1 Utility Distribution Poles

All attachments to utility distribution poles that provide aerial support for overhead utility lines with or without a streetlight attached shall be approved by Xcel or United Power prior to installation. All equipment shall meet Xcel or United Power requirements and Thornton's Right-of-Way and construction permit requirements.

Antennas shall be located inside an enclosure of no more than three (3) cubic feet.

Ground mounted enclosures, including backup power supply, and electric meters must be concealed within the pole, in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible.

All wiring shall be concealed within the pole or in conduit. Color of conduit shall be approved by the City.

3.2 Streetlight Poles

No existing utility pole whose sole purpose is for street lighting can be used to attach small cell facilities as such poles were not designed for small cell attachments. With the City and Utility approval (if applicable), the existing streetlight pole shall be replaced with a metal combined small cell and streetlight pole specifically designed to provide street lighting while also housing small cell equipment for one applicant. Depending on the type of pole being replaced, an applicant may replace the existing streetlight pole with a metal combined small cell and streetlight pole specifically designed to provide street lighting while also housing collocated equipment (up to two small cell facilities).

Xcel Energy Streetlight Poles

No small cell facility shall be located on any Xcel Energy streetlight pole unless the pole is also used as a distribution pole supporting utility lines. In all other cases, the applicant shall have the existing Xcel Energy streetlight pole removed. The applicant shall be responsible for any and all costs, including any fees or costs from Xcel Energy, for removal of the Xcel Energy streetlight pole. The applicant shall place a new combined small cell and streetlight pole in place of the removed Xcel Energy streetlight pole or within 5 feet of the removed Xcel Energy streetlight pole.

- New poles shall match the style shape and color of existing poles and luminaires in the area. The pole shall be designed and located in accordance with all City requirements as specified in the Standards and Specifications, these guidelines, and 2015 American Association of State Highway and Transportation Officials (AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and approved by the City prior to submittal of the application. Designs will be in accordance with the designs shown in **Appendix A** or as otherwise approved by the City.
- Foundations shall be designed to meet the structural requirements of the pole. A foundation detail or drawing stamped by a professional structural engineer shall be submitted to the City.
- The applicant will furnish and install an LED streetlight luminaire meeting City requirements on the new pole.
- The new pole shall be capable of supporting banners.
- The applicant will wire the small cell equipment to its own meter, with recurring monthly electric service and metering paid for by the applicant.
- The applicant will wire the LED streetlight luminaire to a power source as designated by Xcel Energy, with recurring monthly electric service charged at the Xcel Energy ESL rate and paid for by the City. If an existing metered City-owned streetlight circuit is nearby, the applicant shall instead

wire the LED streetlight luminaire to the existing metered City-owned streetlight circuit, with recurring monthly electric service for the City-owned streetlight circuit continuing to be paid for by the City.

- The new pole shall have space for one internal bay to house small cell equipment. If the new pole is capable of housing two collocated small cell facilities, the pole shall have space for two internal bays. The second bay will be available to another applicant with City approval and upon demonstrating no interference with the first occupant's small cell facility. For replacement of post-top mounted streetlights, the new pole shall have only one internal bay for a single applicant.
- Support facilities and enclosures, backup power supply, and electric meters must be concealed within the pole, in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible.
- Antennas shall be located inside an enclosure of no more than three (3) cubic feet. Post-top "cantenna" style antennas shall be used. For poles with post-top mounted streetlights, the antenna shall be housed within the pole.
- All wiring shall be concealed inside the pole within a channel separate from municipal wiring within the pole.
- If the new pole is placed within 5 feet of the removed streetlight pole, any existing caisson of the removed streetlight pole shall be demolished to a minimum of 18 inches below ground surface. Landscaping shall be restored above the removed caisson to the satisfaction of the City.
- Due to the related street light service, the City shall be the owner of the new pole and luminaire upon completion of construction. The applicant shall retain ownership of any small cell equipment.
- The new pole shall have safety shutoff controls on the pole for the City to be able to turn off the small cell equipment for streetlight maintenance purposes.

United Power Streetlight Poles

No small cell facility shall be located on any United Power streetlight pole unless the pole is also used as a distribution pole supporting utility lines. In all other cases, the applicant shall have the existing United Power streetlight pole removed. The applicant shall be responsible for any and all costs, including any fees or costs from United Power, for removal of the United Power streetlight pole. The applicant shall place a new combined small cell and streetlight pole in place of the removed United Power streetlight pole or within 5 feet of the removed United Power streetlight pole.

- New poles shall match the style shape and color of existing poles and luminaires in the area. The pole shall be designed and located in accordance with all city requirements as specified in the Standards and Specifications, these guidelines, and 2015 American Association of State Highway and Transportation Officials (AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and approved by the City prior to submittal of the application. Designs will be in accordance with the designs shown in **Appendix A** or as otherwise approved by the City.
- Foundations shall be designed to meet the structural requirements of the pole. A foundation detail or drawing stamped by a professional structural engineer shall be submitted to the City.
- The applicant will furnish and install an LED streetlight luminaire meeting City requirements on the new pole.
- The new pole shall be capable of supporting banners.
- The applicant will wire the small cell equipment to its own meter, with recurring monthly electric

service and metering paid for by the applicant.

- The applicant will wire the LED streetlight luminaire to a power source as designated by United Power, with recurring monthly electric service charged at the United Power ESL rate and paid for by the City. If an existing metered City-owned streetlight circuit is nearby, the applicant shall instead wire the LED streetlight luminaire to the existing metered City-owned streetlight circuit, with recurring monthly electric service for the City-owned streetlight circuit continuing to be paid for by the City.
- The new pole shall have space for one internal bay to house small cell equipment. If the new pole is capable of housing two collocated small cell facilities, the pole shall have space for two internal bays. The second bay will be available to another applicant with City approval and upon demonstrating no interference with the first occupant's small cell facility. For replacement of post-top mounted streetlights, the new pole shall have only one internal bay for a single applicant.
- Support facilities and enclosures, backup power supply, and electric meters must be concealed within the pole, in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible.
- Antennas shall be located inside an enclosure of no more than three (3) cubic feet. Post-top "cantenna" style antennas shall be used. For poles with post-top mounted streetlights, the antenna shall be housed within the pole.
- All wiring shall be concealed inside the pole within a channel separate from municipal wiring within the pole.
- If the new pole is placed within 5 feet of the removed streetlight pole, any existing caisson of the removed streetlight pole shall be demolished to a minimum of 18 inches below ground surface. Landscaping shall be restored above the removed caisson to the satisfaction of the City.
- Due to the related street light service, the City shall be the owner of the new pole and luminaire upon completion of construction. The applicant shall retain ownership of any small cell equipment.
- The new pole shall have safety shutoff controls on the pole for the City to be able to turn off the small cell equipment for streetlight maintenance purposes.

City-Owned Streetlight Poles

No small cell facility shall be attached to any existing City-owned streetlight pole unless the existing streetlight pole was specifically designed to support small cell equipment. In all other cases, the applicant shall have the existing City-owned streetlight pole removed. The applicant shall be responsible for any and all costs for removal of the City-owned streetlight pole. The applicant shall place a new combined small cell and streetlight pole in place of the removed City-owned streetlight pole or within 5 feet of the removed City-owned streetlight pole.

- New poles shall match the style shape and color of existing poles and luminaires in the area. The pole shall be designed and located in accordance with all City requirements as specified in the Standards and Specifications, these guidelines, and 2015 American Association of State Highway and Transportation Officials (AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and approved by the City prior to submittal of the application. Designs will be in accordance with the designs shown in **Appendix A** or as otherwise approved by the City.
- Foundations shall be designed to meet the structural requirements of the pole. A foundation detail or drawing stamped by a professional structural engineer shall be submitted to the City.

- The applicant shall furnish and install an LED streetlight luminaire meeting City requirements.
- The new pole shall be capable of supporting banners.
- The applicant shall wire the small cell equipment to its own meter, with recurring monthly electric service and metering paid for by the applicant.
- The applicant shall wire the LED streetlight luminaire to the previously existing power source, with recurring monthly electric service and metering (if applicable) continuing to be paid for by the City.
- The new pole shall have space for one internal bay to house small cell equipment. If the new pole is capable of housing two collocated small cell facilities, the pole shall have space for two internal bays. The second bay will be available to another applicant with City approval and upon demonstrating no interference with the first occupant's small cell facility. For replacement of post-top mounted streetlights, the new pole shall have only one internal bay for a single applicant.
- Support facilities and enclosures, backup power supply, and electric meters must be concealed within the pole, in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible
- Antennas shall be located inside an enclosure of no more than three (3) cubic feet. Post-top "cantenna" style antennas shall be used. For poles with post-top mounted streetlights, the antenna shall be housed within the pole.
- All wiring shall be concealed inside the pole within a channel separate from municipal wiring within the pole.
- If the new pole is placed within 5 feet of the removed streetlight pole, any existing caisson of the removed streetlight pole shall be demolished to a minimum of 18 inches below ground surface. Landscaping shall be restored above the removed caisson to the satisfaction of the City.
- Due to the related street light service, the City shall be the owner of the new pole and luminaire upon completion of construction. The applicant shall retain ownership of any small cell equipment.
- The new pole shall have safety shutoff controls on the pole for the City to be able to turn off the small cell equipment for streetlight maintenance purposes.
- Removed City-owned streetlights and luminaires shall be salvaged and returned to the City of Thornton Infrastructure Maintenance Center.

3.3 Municipal Traffic Signal Poles

Applicants may submit applications to install small cell facilities on municipally owned traffic signal poles. The City will consider such applications assuming the pole is not expected to be used for emergency communications or tolling equipment. No small cell facility shall be attached to any existing traffic signal pole unless the existing traffic signal pole was specifically designed to support small cell equipment. In all other cases, the applicant shall replace the traffic signal pole and mast arm with a traffic signal pole and mast arm designed to accommodate the small cell equipment in addition to the required traffic signal and streetlight equipment. An applicant may be limited to one municipally owned traffic signal pole within 300 feet. For example, at a signalized intersection there is generally 4 signal poles. A single applicant may be approved for only 1 of the 4 signal poles. Other applicants may be approved for the other poles.

- New traffic signal poles, mast arms, and luminaires shall match the style, shape, and color of existing traffic signal poles at the intersection. The pole shall be designed and located in accordance with all City requirements as specified in the Standards and Specifications, these guidelines, and 2015 American Association of State Highway and Transportation Officials

(AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and approved by the City prior to submittal of the application.

- Foundations shall be designed to meet the structural requirements of the pole. A foundation detail or drawing stamped by a professional structural engineer shall be submitted to the City.
- The applicants shall provide their own power and fiber (or other communications medium) to their small cell facility attached to the traffic signal pole.
- Support facilities and enclosures, backup power supply, and electric meters must be in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible.
- Antennas shall be located inside an enclosure of no more than three (3) cubic feet. Post-top “cantenna” style antennas shall be used.
- All wiring shall be concealed inside the signal pole within a channel separate from municipal wiring within the pole.
- In cases of wood signal poles, the applicant(s) shall replace the wood pole with an acceptable metal signal pole meeting all City requirements as specified in the Standards and Specifications and these guidelines.
- Due to the function of the pole as an official traffic control device, the City shall be the owner of the new traffic signal pole, mast arm, traffic signal equipment, and luminaire upon completion of construction. The applicant shall retain ownership of any small cell equipment.
- The new traffic signal pole shall have safety shutoff controls on the pole for the City to be able to turn off the small cell equipment for maintenance purposes.
- Removed traffic signal poles, mast arms, luminaires, and equipment shall be salvaged and returned to the City of Thornton Infrastructure Maintenance Center.

3.4 Applicant-Owned Poles

Applicants may submit applications to install small cell facilities on new applicant-owned poles.

- New applicant-owned poles shall match the style shape and color of existing poles in the area. The pole shall be designed and located in accordance with all City requirements as specified in the Standards and Specifications, these guidelines, and 2015 American Association of State Highway and Transportation Officials (AASHTO) LRFD Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, and approved by the City prior to submittal of the application. Design of the new applicant-owned pole shall be consistent with the pole designs detailed in **Appendix A** or as otherwise approved by the City.
- Foundations shall be designed to meet the structural requirements of the pole. A foundation detail or drawing stamped by a professional structural engineer shall be submitted to the City.
- Support facilities and enclosures, backup power supply, and electric meters shall be concealed within the pole, in existing above-ground cabinets, or placed in a flush-to-grade underground equipment vault unless otherwise demonstrated to the satisfaction of the City to not be feasible.
- The new pole shall have space for one internal bay to house small cell equipment. If the new pole is capable of housing two collocated small cell facilities, the pole shall have space for two internal bays. The second bay will be available to another applicant with City approval and upon demonstrating no interference with the first occupant’s small cell facility. For replacement of post-

top mounted streetlights, the new pole shall have only one internal bay for a single applicant

- Antennas shall be located inside an enclosure of no more than three (3) cubic feet. Post-top “cantenna” style antennas shall be used.
- All wiring shall be concealed inside pole.
- The new applicant-owned pole shall have safety shutoff controls on the pole for the City to be able to turn off the small cell equipment for maintenance of nearby City-owned facilities.

4. Pole Size and Siting Requirements

4.1 Location

The City reserves the right to approve all proposed pole locations and to modify those locations as necessary for future City needs, functional and/or aesthetic reasons. The City will work with the applicant to find a suitable location for both the City and the applicant.

Wireless communication facilities shall not be located on historically or architecturally significant structures unless visually and architecturally integrated with the structure and shall not interfere with prominent vistas or significant public view corridors

New applicant-owned small cell poles shall be located no closer than 250 feet radially to other applicant-owned poles, regardless of ownership. New applicant-owned small cell poles shall be located no closer than 25 feet radially to any other poles.

At the sole discretion of the City, multiple poles may be placed at intersections, however, each applicant may apply for only one additional pole at an intersection.

Poles shall be located where ever possible on property lines. Where ever possible the poles shall be sited to take advantage of existing screening.

All equipment and poles located within the public ROW shall be located such that it meets ADA requirements and does not obstruct, impede, or hinder usual pedestrian or vehicular travel. Any pole and/or associated small cell equipment shall not obstruct any sight distance as defined in City Code, any traffic control signs, signals, or devices, access to any public transportation facilities or bus stops, or access to any ingress or egress points to any public or private facilities in or adjacent to the public right-of-way.

Poles shall not be located:

- Within 30 feet of a fire hydrant unless replacing an existing pole in the same location, reduced distances can be approved by the City.
- In any manner which would obstruct a public sidewalk or roadway including reducing vertical clearances required by the City.
- Closer than 2 feet from curb or sidewalk.
- Within 10 feet of a driveway.
- Less than 15 feet or within the drip line of an existing tree, whichever is greater in order to protect the health of the tree.
- Within roadway medians due to non-breakaway design.

In areas of the City identified as parks and open space or designated as a historical district (as currently defined in Section 19-3 of City Code), or within 500 feet of a landmark (as currently defined in Section 19-3 of city code), the applicant shall conduct a consultation with the applicable departments, divisions, or personnel of the City to discuss aesthetically significant structures, views, or community features and options to minimize any adverse aesthetic impacts of attaching or installing small cell facilities in such areas.

No equipment, shelters, or cabinets, and no electrical distribution panels may be at ground level, except after all reasonable alternative pole locations have been explored and found unavailable or lacking in some substantial way, and only with the prior written approval of the City upon a good faith showing of necessity, and upon such conditions as the City deems appropriate under the circumstances. The City shall weigh such requests against historic preservation policies, aesthetic

considerations, pedestrian, and disabled person access to sidewalks, public safety concerns, technical installation conflicts, and compliance with all applicable laws.

4.2 Height Requirements

The height of the pole shall be based on the existing streetlights in public right-of-way adjacent to where it is to be placed.

For a small cell facility located adjacent to post-top streetlights, the overall height of the wireless support structure and any antennas shall not be more than 30 feet in height above established grade measured at the base of the wireless support structure.

For a small cell facility located adjacent to arm mounted cobra head streetlights or adjacent to shepherds hook streetlights, the overall height of the wireless support structure and any collocated antennas shall not exceed 40 feet in height above established grade measured at the base of the wireless support structure.

For a small cell facility attached to a traffic signal pole, the overall height of the traffic signal pole and small cell antenna shall not exceed 40 feet in height above established grade measured at the base of the traffic signal.

Antennas must be located at a minimum of 20 feet above established grade measured at the base of the wireless support structure. In rare instances, the City may allow for a cabinet to be mounted on a utility distribution pole. If allowed, the cabinet shall be a minimum of 8 feet above the ground level and shall be mounted facing away from the street.

4.3 Noise

The applicant is required to incorporate ambient noise suppression measures and/or required to place the equipment in locations less likely to impact adjacent residences or businesses to ensure compliance with all applicable noise regulations. The maximum allowable noise emitted by the Small Cell Facility shall not exceed 30 dB measured at a distance of 3 feet from any portion of the facility.

4.4 Signage

Signage is prohibited on all small cell facilities and wireless support structures, including stickers, logos, and other non-essential graphics and information with the following exceptions:

1. Required by the FCC.
2. A required small placard identifying the service provider and providing a 24-hour contact number, which shall be placed facing away from the public rights of way.

5. Safety Requirements

Prevention of failures and accidents. Any Person who owns a Small Cell Facility and/or Wireless Support Structure sited in the ROW shall at all times employ ordinary and reasonable care and install and maintain in use industry standard technology for preventing failures and accidents which are likely to cause damage, injury, or nuisance to the public.

Compliance with fire safety and FCC regulations. Small Cell Facilities, wires, cables, fixtures, and other equipment shall be installed and maintained in substantial compliance with the requirements of the National Electric Code, all FCC, state, and local regulations, and in such manner that will not interfere with the use of other property.

Changes in state or federal standards and regulations. If state or federal standards and regulations are amended, the owners of the Small Cell Facilities and/or Wireless Support Structures governed by this chapter shall bring any facilities and/or structures into compliance with the revised standards and regulations within six months of the effective date of the standards and regulations, unless a different compliance schedule is mandated by the regulating agency. Failure to bring Small Cell Facilities and/or Wireless Support Structures into compliance with any revised standards and regulations shall constitute grounds for removal at the owner's expense.

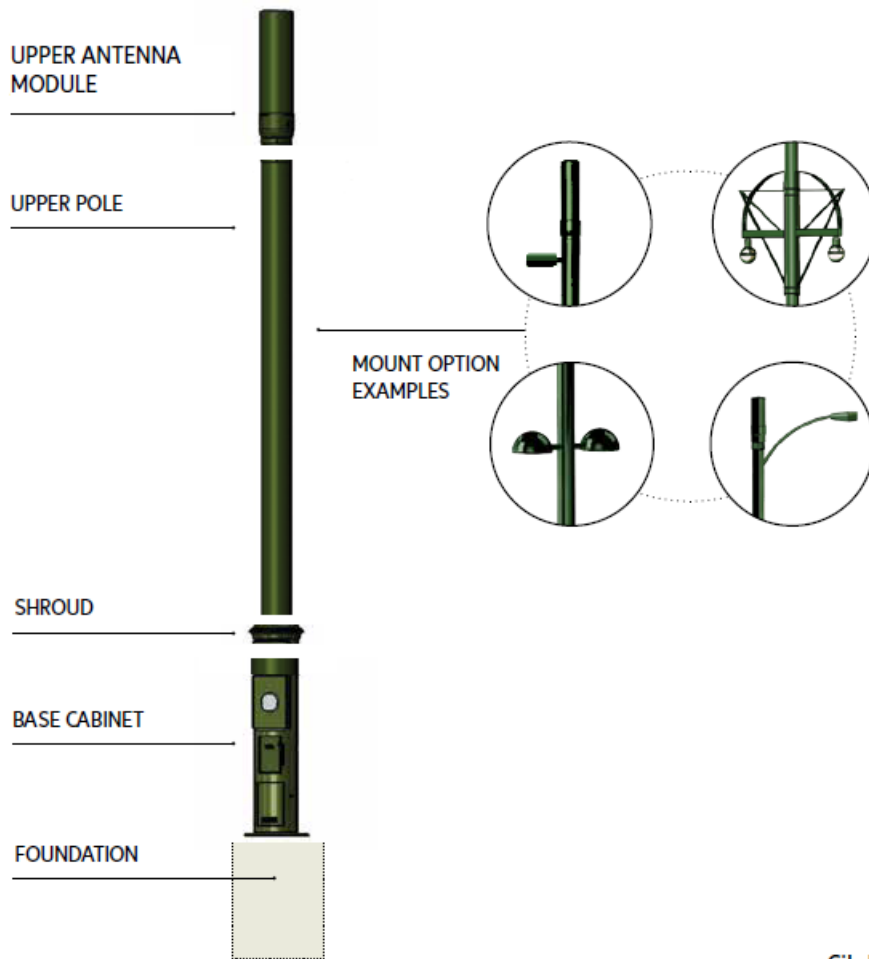
Indemnification. Any Operator who owns or operates Small Cell Facilities or Wireless Support Structures in the ROW shall indemnify, protect, defend, and hold the City and its elected officials, officers, employees, agents, and volunteers harmless against any and all claims, lawsuits, judgments, costs, liens, losses, expenses, fees to include reasonable attorney fees and costs of defense, proceedings, actions, demands, causes of action, liability and suits of any kind and nature, including personal or bodily injury or death, property damage or other harm for which recovery of damages is sought, to the extent that it is caused by the negligence of the Operator who owns or operates Small Cell Facilities and wireless service in the ROW, any agent, officer, director, representative, employee, affiliate, or subcontractor of the Operator, or their respective officers, agents, employees, directors, or representatives while installing, repairing, or maintaining facilities in the Right of Way.

Surety bond or equivalent financial tool for cost of removal. All owners must procure and provide to the City a bond, or must provide proof of an equivalent financial mechanism, to ensure compliance with all provisions of this Chapter. The bond must be maintained for as long as the owner has Small Cell Facilities and/ or Wireless Support Structures located in the Right of Way. The bond or equivalent financial method must specifically cover the cost of removal of unused or Abandoned Small Cell Facilities and/ or Wireless Support Structures or damage to City property caused by an Operator or its agent of each Small Cell Facility and/ or Wireless Support Structure in case the City has to remove or pay for its removal. Two acceptable alternatives to a bond include a funds set-aside and a letter of credit.

Appendix A: Designs

The following diagrams and information were provided by, and used with the permission of, Comptek Technologies/CityPole®. The inclusion of this information in no way indicates that the City endorses CityPole or its products.

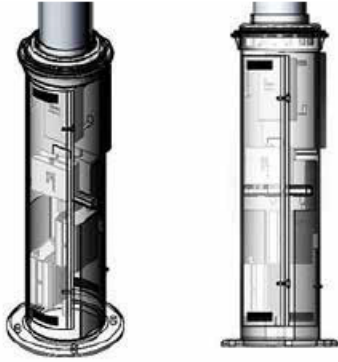
A.1 Diagram of Small Cell Facility Pole



CityPole.com

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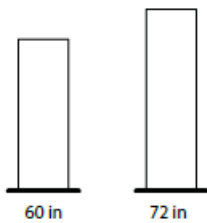
A.2 Base Cabinet



Integrated wireless equipment in base cabinet.



The base cabinet can be configured with a wide range of electrical disconnects to meet local building codes and preferences.



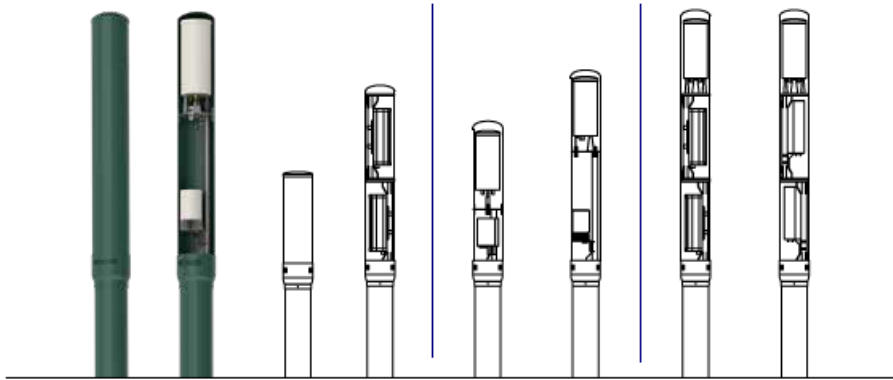
The base cabinet height can be chosen to house future equipment and complement local cityscapes.



Round Structural Base Cabinet

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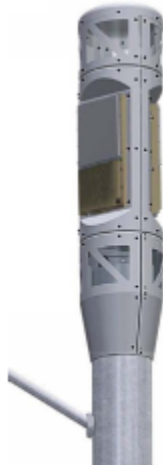
A.3 Upper Antenna Module



The upper antenna module can be easily reconfigured for a number of technology generations. These includes multiple configurations of cellular technology, various backhaul and low power options such as WIFI, Bluetooth, or Zigbee, and as many as three different technology generations.



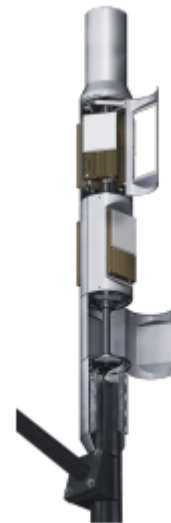
4G Single Carrier



5G Single Carrier



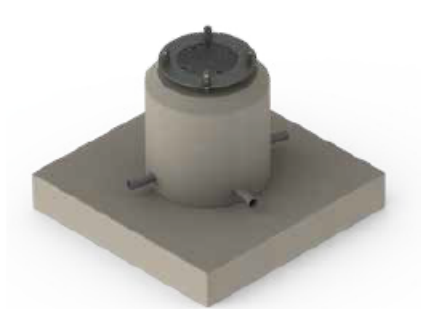
4G/5G Single Carrier



4G/5G Multi Carrier

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A.4 Foundation Selection



CityPole® pre-cast foundation speeds work in the Right of Way.



Caisson and custom designs are available.

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A.5 Lighting Accessories



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A.6 Color Options

CITYPOLE® STANDARD RAL COLOR OPTIONS



CUSTOM COLORS AND NATURAL FINISHES ARE AVAILABLE UPON REQUEST

